

Claims

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1. A contact node comprising at least two metallized contacts coupled with conductive paths arranged on surfaces of connection layers made on the base of a dielectric material and mutually aligned and interconnected electrically and mechanically by conductive binding material, *characterized* in that it is made in the form of joint between a contact made in the form of metallized contact pad coupled with the conductive paths on the surface of the connection layer, and a respective contact jointed with said pad and made in the form of metallized hole in an upper-lying connection layer, the lower edge of the metallized hole being faced to the metallized contact pad on the surface of the underlying connection layer, and the upper edge of said hole being coupled with the conductive paths on the upper surface of the upper-lying connection layer.

2. The contact node according to claim 1, *characterized* in that the metallized hole is made in the form of cylinder.

3. The contact node according to claim 2, *characterized* in that the upper edge of the metallized hole coupled with the conductive paths on the surface of the connection layer is made with a metallized rim along the periphery of the edge.

4. The contact node according to claim 1, *characterized* in that the metallized hole is made in the form of truncated cone, the lesser base of the truncated cones being faced to the contact pad on the surface of the underlying connection layer, and the greater base of the truncated cones being coupled with the conductive paths on the upper surface of the upper-lying connection layer.

5. The contact node according to claim 4, *characterized* in that the upper edge of the metallized hole coupled with the conductive paths on the surface of the connection layer is made with a metallized rim along the periphery of the edge.

6. The contact node according to claim 4, *characterized* in that an integrated circuit chip oriented by its metallized contact pads to corresponding metallized holes in the upper-lying connection layer is used as a connection layer with metallized contact pads respective to the metallized holes in the upper-lying connection layer.

7. The contact node according to claim 1, *characterized* in that the metallized contact pad is made flat.

8. The contact node according to claim 1 or 6, *characterized* in that a protrusion interacting with the respective metallized hole is formed in the center of the metallized contact pad respective to the metallized hole.

9. The contact node according to claim 8, *characterized* in that the protrusion is made in the form of cylinder.

10. The contact node according to claim 8, *characterized* in that the protrusion is made in the form of cone.

11. The contact node according to claim 8, *characterized* in that the protrusion is made in the form of sphere.

12. The contact node according to claim 8, *characterized* in that the protrusion is made of a conductive material.

13. The contact node according to claim 8, *characterized* in that the protrusion is made of solder.

14. The contact node according to claim 1, *characterized* in that a contact made in the form of a rod fixed in the underlying connection layer orthogonally to its surface is inserted into the metallized hole.

15. The contact node according to claim 14, *characterized* in that the rod has the form of cylinder.

16. The contact node according to claim 14, *characterized* in that the rod has the form of polygon.

17. The contact node according to claim 14, *characterized* in that grooves are made along the generatrix of the rod.

18. The contact node according to claim 17, *characterized* in that the grooves are made interrupted.

19. The contact node according to claim 14, *characterized* in that the rod is made from a conductive material.

20. The contact node according to claim 14, *characterized* in that the rod is made from an electrical insulating material with a conductive coating.

21. The contact node according to claim 5, *characterized* in that the diameter D of the greater base of the truncated cone, the width h of the metallized rim, the diameter d of the lesser base of the truncated cone, the thickness t of the dielectric material of the connection layer and the minimal width L of the respective metallized contact pad on the underlying connection layer are coupled with the following relationship:

$$L \geq D + 2h = d + 2t + 2h$$

22. The contact node according to claim 14, *characterized* in that the upper edge of the metallized hole coupled with the conductive paths and a lower edge of the metallized hole are made with metallized rims on the surfaces of the connection layer along the periphery of the edges.

23. The contact node according to claim 3, *characterized* in that the upper and lower edges of the metallized hole have a facet.